## AMENDMENT

**Amendments to the Claims**

1. (currently amended) A method of measuring contaminants in water comprising:

   a. introducing into ~~a transgenic~~ an aquatic organism a DNA construct ~~having the~~ comprising a sequence ~~of~~ encoding at least one regulatory response element ~~gene~~ operatively linked to a DNA molecule comprising ~~encoding~~ at least one reporter gene such that the at least one regulatory response element ~~of the gene~~ controls the expression of the at least one reporter gene and thereby forming an operative transgenic organism;

   b. exposing the transgenic organism to a water sample to be tested for a time sufficient to allow contaminants to become bioconcentrated within the transgenic organism;

   c. exposing the transgenic organism to conditions permitting expression of the at least one reporter gene; and

   d. detecting the expression of the at least one reporter gene; and

   e. correlating the detected expression to known standards and thereby determining the quantity of contaminants in the water sample.

2. (currently amended) A method of measuring contaminants in water comprising:

   a. introducing into ~~a transgenic~~ an organism a DNA construct ~~having the~~ comprising a sequence of two or more regulatory response elements ~~element genes~~ operatively linked to a DNA molecule comprising ~~encoding~~ at least one reporter gene such that ~~a~~ at least one of the regulatory elements ~~of the gene~~ controls expression of the reporter gene and thereby forming an operative transgenic organism;

   b. exposing the transgenic organism to a water sample to be tested for a time sufficient to allow contaminants to become bioconcentrated within the transgenic organism;

   c. exposing the transgenic organism to conditions permitting expression of the reporter gene ~~genes~~; and

   d. detecting the expression of the reporter gene ~~genes~~; and

e. correlating the detected expression to known standards and thereby determining the quantity of contaminants in the water sample.

3. (currently amended) The method according to claim 1 wherein the regulatory response element is a promoter ~~elements are promoters~~.

4. (currently amended) The method according to claim 1 wherein the regulatory response ~~elements are~~ element is a promoter selected from the group consisting of ~~a~~ metal response elements (MRE), ~~the~~ aromatic hydrocarbon response elements (AHRE), ~~the~~ estrogen response elements (ERE), ~~the~~ electrophile response elements (EPRE), and ~~the~~ retinoic acid response elements (RARE, RXRE).

5. (original) The method according to claim 4 wherein the reference standard is an aquatic source containing a known contaminant concentration.

6. (previously presented) The method according to claim 5 wherein the transgenic organism is exposed the water sample for at least one minute.

7. (previously presented) The method according to claim 5 wherein the transgenic organism is exposed the water sample for at least 2 minutes.

8. (previously presented) The method according to claim 5 wherein the transgenic organism is exposed the water sample for at least one hour.

9. (previously presented) The method according to claim 5 wherein the transgenic organism is exposed the water sample for at least 12 hours.

10. (previously presented) The method according to claim 5 wherein the transgenic organism is exposed the water sample for at least 24 hours.

11. (currently amended) The method according to claim 2 wherein the regulatory response element is a promoter selected from the group consisting of metal response elements (MRE), aromatic hydrocarbon response elements (AHRE), estrogen response elements (ERE), electrophile response elements (EPRE), and retinoic acid response elements (RARE, RXRE) ~~the transgene contains at least one response element from a gene selected from the group consisting of CYP1A, CYP1B, CYP1A1CYP2D6, CYP3A, CYP3A4, MT, MT1, MT2,~~

~~MTF-1, ACE1, NM01, AMT1, AHR, ARNT, AHR1, AHR2, ARNT1, ARNT2, AHRE1, AHRE2, and AHRE5~~.

12. (currently amended) The method according to claim 11 wherein the reporter gene ~~element is~~ encodes a bioluminescent molecule ~~system~~.

13. (currently amended) The method according to claim 4 wherein the DNA construct ~~transgene~~ is made up of multiple copies of the same response element.

14. (currently amended) The method according to claim 4 wherein the DNA construct ~~transgene~~ contains more than one type of response element.

15. (currently amended) The method according to claim 4 wherein the DNA construct ~~transgene~~ contains more than two types of response element.

16. (currently amended) The method according to claim 4 wherein the DNA construct ~~transgene~~ contains two or more copies each of more than one type of response element.

17. (currently amended) The method according to claim 4 wherein the DNA construct ~~transgene~~ contains additional promoters or enhancers.

18. (currently amended) The method according to claim 4 wherein the DNA construct ~~transgene~~ contains at least one response element ~~from a gene~~ selected from the group consisting of CYP1A, CYP1B, ~~CYP1A1CYP2D6~~ CYP1A1, CYP2D6, CYP3A, CYP3A4, MT, MT1, MT2, MTF-1, ACE1, NM01, AMT1, AHR, ARNT, AHR1, AHR2, ARNT1, ARNT2, AHRE1, AHRE2, and AHRE5.

19. (currently amended) The method according to claim 18 wherein the reporter ~~element is~~ gene encodes a bioluminescent molecule ~~system~~.

20. (currently amended) The method according to claim ~~18~~ 19 wherein the reporter gene ~~bioluminescent system~~ is a luciferase or GFP gene ~~system~~.

21. (currently amended) The method according to claim ~~18~~ 19 wherein the reporter gene ~~bioluminescent system~~ is a luciferase gene ~~system~~.

22. (currently amended) The method according to claim ~~18~~ 19 wherein the reporter gene ~~bioluminescent system~~ is a eucaryotic luciferase gene ~~system~~.

23. (currently amended) The method according to claim ~~18~~ 19 wherein the reporter gene ~~bioluminescent system~~ is a GFP reporter gene ~~system~~.

24. (original) The method according to claim 22 wherein the conditions permitting expression of the reporter gene include a sufficient amount of enzyme substrate.

25. (currently amended) The method according to claim 24 ~~23~~ wherein the substrate is luciferin.

26. (currently amended) The method according to claim 25 ~~24~~ wherein the detection of the expression of the reporter gene is by using a luminometer.

27. (previously presented) The method according to claim 18 wherein the transgenic organism is exposed to a water sample to be tested continually wherein the organism is removed from the water sample repeatedly at selected intervals exposed to conditions permitting expression of the reporter gene and detected for reporter gene expression wherein such repeated exposures and detecting of expression is effective to track a time course of contaminant levels.

28. (original) The method according to claim 22 wherein the contaminant to be detected is one or more contaminants selected from the group consisting of polyaromatic hydrocarbons, electrophilic oxidants heavy metals, endocrines, and retinoids.

29. (original) The method according to claim 22 wherein the contaminant to be detected is one or more contaminants selected from the group consisting of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin, dioxin, polychlorinated biphenyls, quinones, mercury, copper, nickel, cadmium, zinc, estrogens, retinoic acid and 9-*cis*-retinoic acid.

30. (original) The method according to claim 22 wherein the contaminant to be detected is mercury.

31. (original) The method according to claim 28 wherein both a polyaromatic hydrocarbon and an electrophilic oxidant heavy metal are detected contaminants.

32. (previously presented) The method according to claim 22 wherein the contaminants become bioconcentrated at least 1,000-fold, relative to the water in the tissues of the organism.

33. (original) The method according to claim 22 wherein the fish are removed from the test water and placed immediately in a luminometer cuvette and incubated with luciferin.

34. (currently amended) The method according to claim 18 wherein the reporter gene sequence ~~transgenes have~~ has a degree of homology of at least about 85% to the reporter gene sequence of the native source of the reporter gene ~~genes~~.

35. (currently amended) The method according to claim 22 wherein the reporter gene has at least 85% homology to a ~~the~~ luciferase reporter gene ~~system~~ in the firefly Photinus pyralis.

36. (currently amended) The method according to claim 23 wherein the reporter gene sequence has at least 85 % homology to ~~the~~ a reporter gene sequence of a species of Aequorea.

37. (currently amended) The method according to claim 22 wherein the luciferase reporter gene ~~system~~ is derived from a species selected from the group consisting of Aequorea victoria and Aequorea forskalea.